

*MasterCard
International*



Global Corporate Products Advisory Council

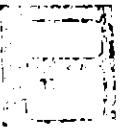
The Complete Chip Solution

Laura Moll
MasterCard and MONDEX
December 5, 1997

HIGHLY CONFIDENTIAL
SUBJECT TO PROTECTIVE ORDER

CC 09 016461

P-1078



State of the Industry

Payment Business

- Tightening margins in the card business
- Aging technology platforms
- Increased relationship management/marketing focus
- Heightened demand from cardholders for more choice/convenience
- Increased demand by merchants for value-added opportunities

NOT FOR PUBLICATION
SUBJECT TO PROTECTIVE ORDER

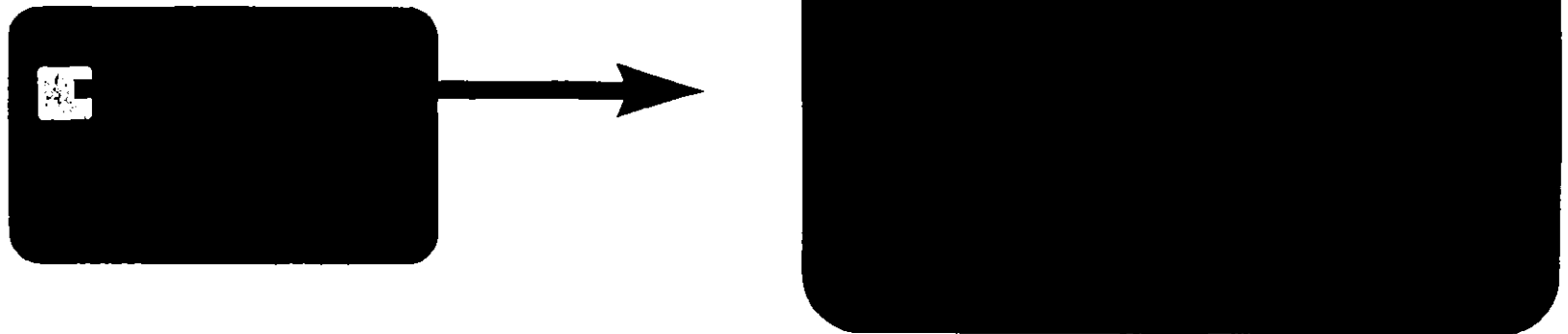
CC 09 016462



Chip and the Industry

What the Chip does...

- Puts a "PC" on a card
- Enables transactions from card to card as the chip contains the software
- Contains more than 70 times more memory than magnetic stripe





The MasterCard Strategy

An Overview

- A basis for interoperability
- The business case, product and marketing flexibility to identify business drivers in different markets, creating the basis for competitive differentiation
- Technical flexibility to provide for differing business requirements
- Infrastructure and implementation to support chip
- Communication and training of multiple audiences



Mondex International (MXI)

What Is MXI?

- A UK company incorporated in July 1996
- Majority-owned by MasterCard International
- Develops chip-based technology
- Administers "the scheme" (Mondex electronic cash)
 - Licenses members via franchises
 - Maintains business rules and standards
- Type approves equipment suppliers
- Provides technical, commercial, and security services

EXEMPT FROM PROTECTIVE ORDER

CC 09 016465



MULTOS

Overview

- A high-security, multi-application operating system
- Enables a number of different applications to be held on a card simultaneously, separately and securely
- Supports dynamic load/unload of applications after card issuance
- A non-proprietary, open industry-controlled standard
- MULTOS specification development is driven by MAOSCO



MULTOS

Benefits for Card Issuers

- A complete and future-proof solution
- Multiple, interoperable sources of supply
- Open, industry-controlled standards
- Issuers compete at the product/service level, not at the technology level

HIGHLY CONFIDENTIAL
SUBJECT TO PROHIBITIVE ORDERS

CC 09 016467



MULTOS

Benefits for Card Issuers

- Can enter the smart card arena when it is right for their markets and their business
- Allows card issuers a first opportunity to “share” space on the chip and hence, spreads the cost of the cards
- Allows issuers to introduce and upgrade products and services in the field without having to recall or reissue cards



New Applications

Benefits for Card Issuers

- Enhanced consumer relations
- Market segmentation opportunities
- New revenue stream

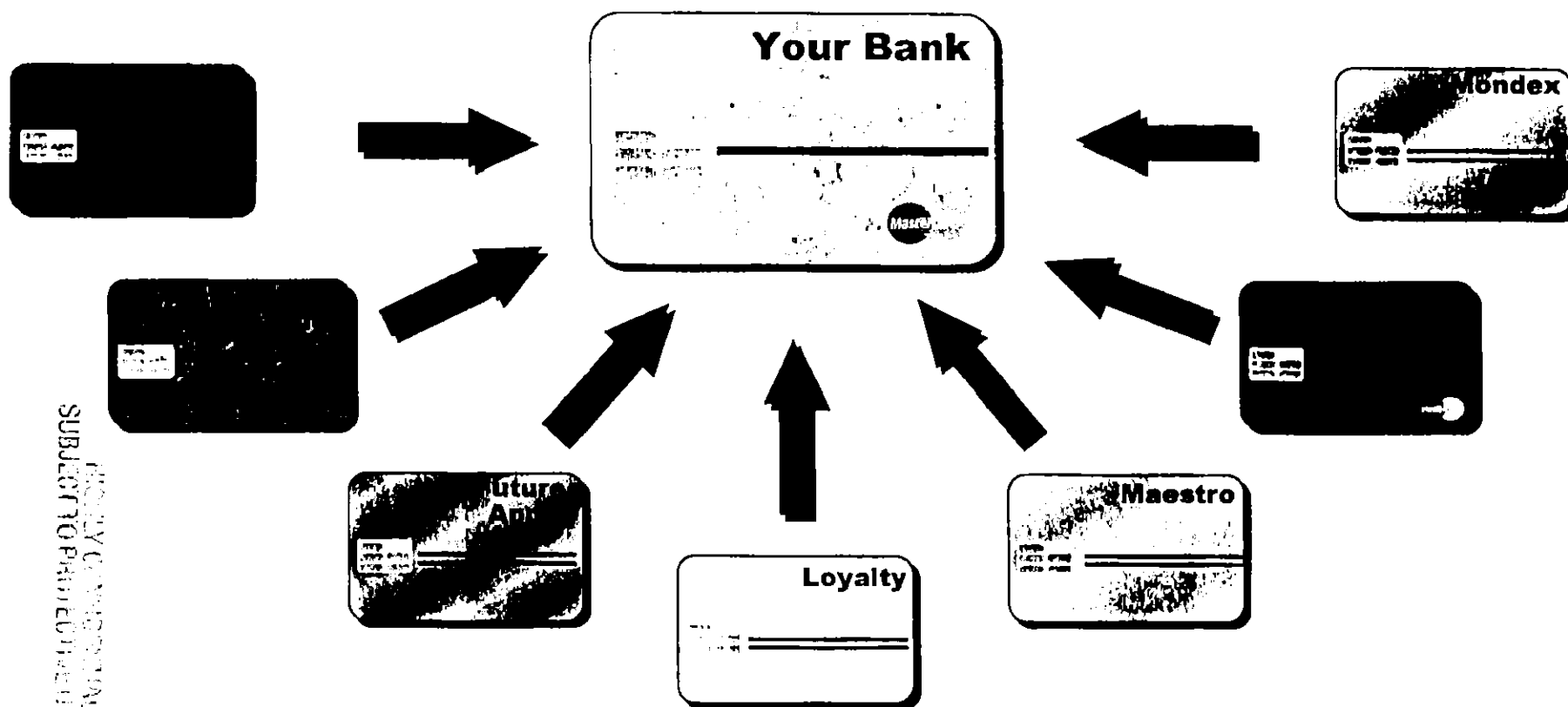
PROPERTY OF THE
SUBJECT TO PATENTIVE ORDER

CC 09 016469



MULTOS

Benefits

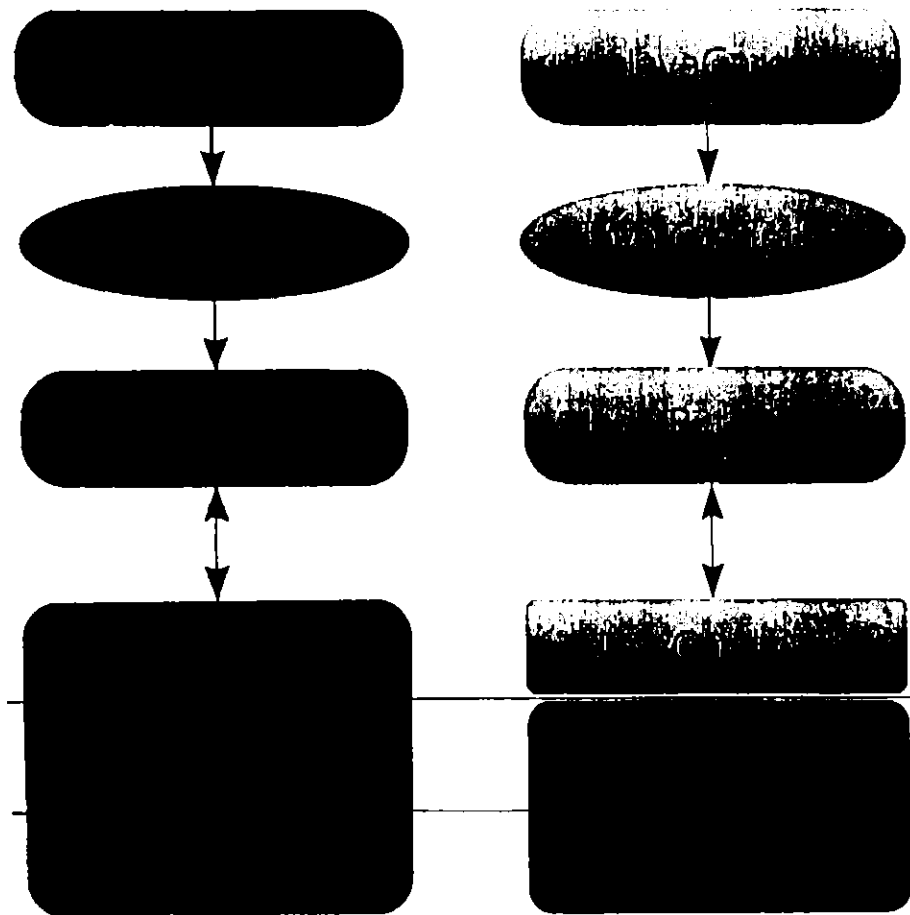


PROPERTY OF MULTOS
SUBJECT TO PATENT RIGHTS

CC 09 016470



How MULTOS Will Accommodate JavaCard in the Future



MULTOS and JavaCard are architecturally similar above the operating system

MULTOS and JavaCard are complementary



MULTOS and JavaCard

Everyone is Talking about it...

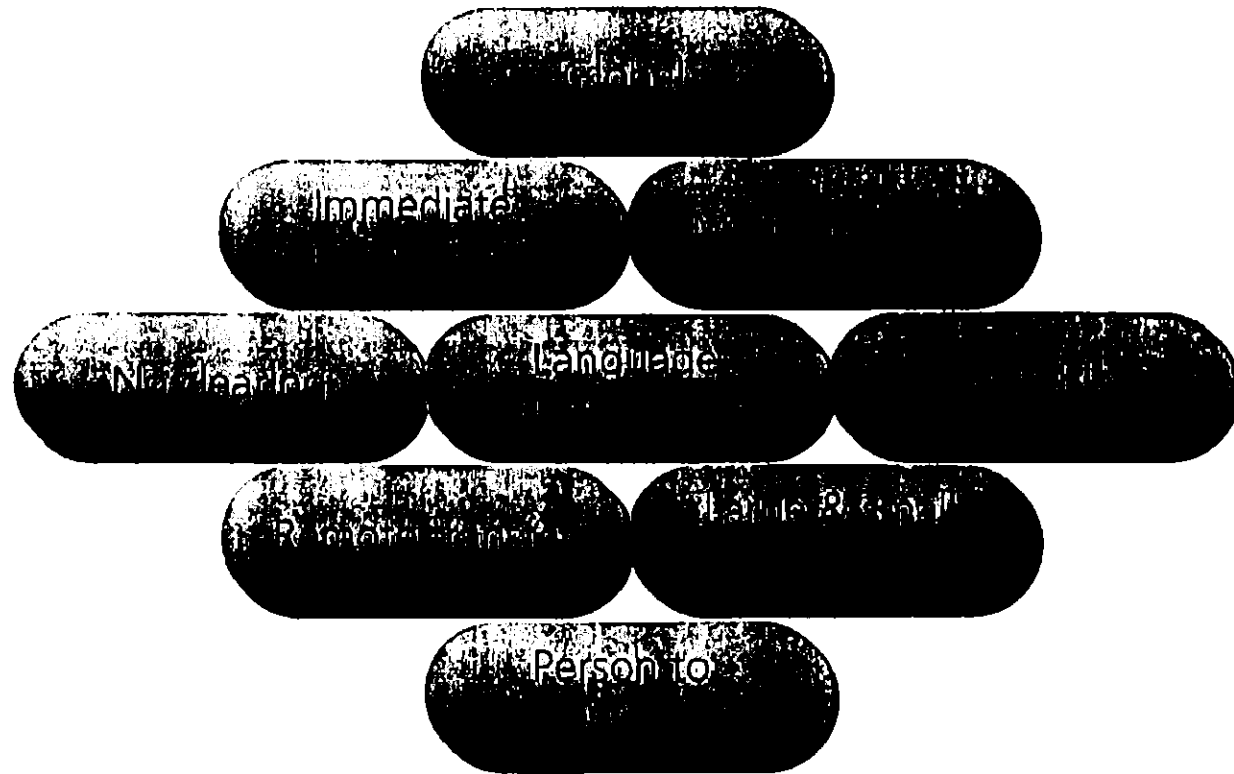
"The secure environment and combination of Sun Microsystems' JavaCard and the MULTOS operating system will increase use of smartcards, particularly for electronic commerce. I am delighted that Mondex International has made a commitment to actively contribute to the development of the JavaCard 2.0 API and to offer it as part of MULTOS in the future."

- Ted Goldstein, Chief Java Commerce Officer
(a division of Sun Microsystems)



Mondex Electronic Cash

Only Known Purse Initiative Combining
the Following Features:



CC 09 016473

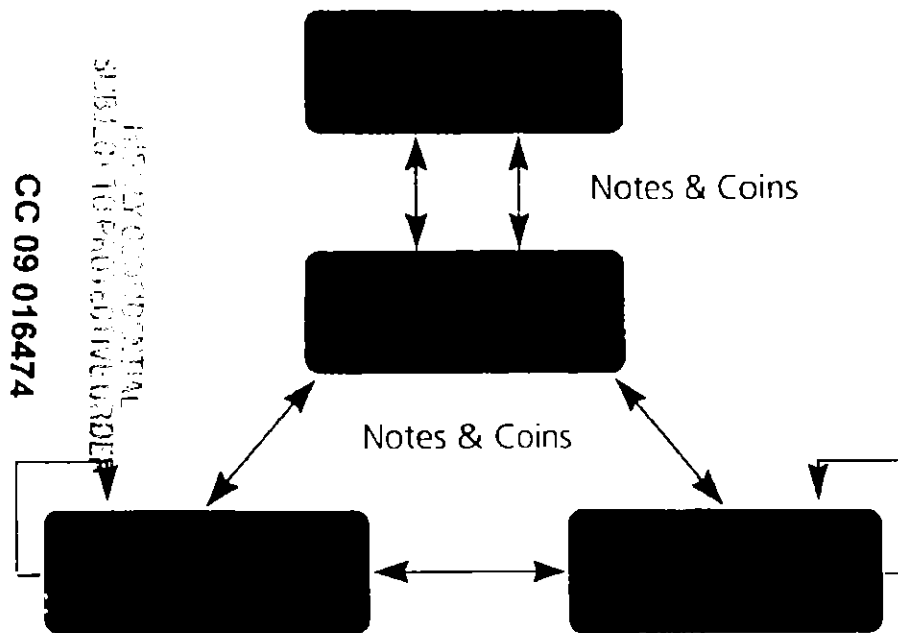
1995/11/10 10:00:00 AM
C:\Mondex\1016473\1016473.DAT



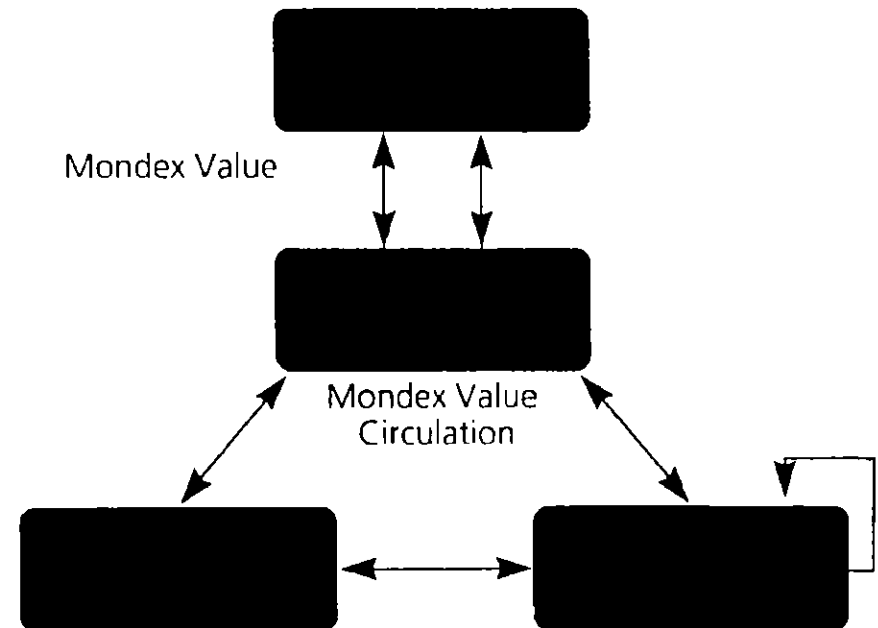
Mondex Electronic Cash

It's Like Cash

Traditional Cash Circulation

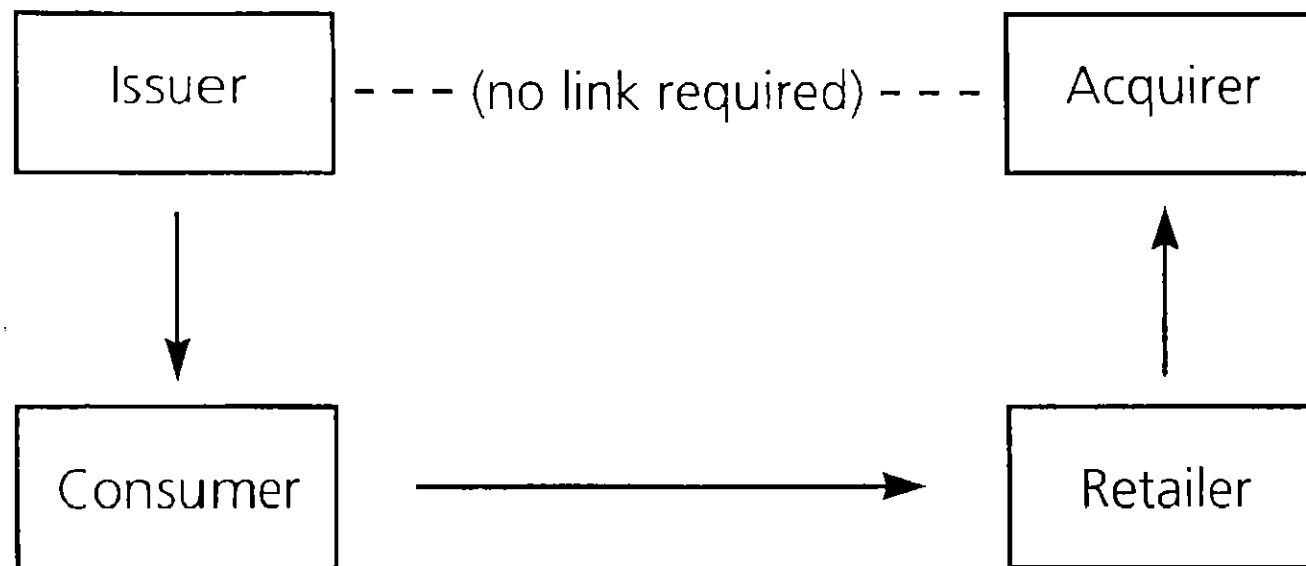


Originator Acts Like a Central Bank



Mondex Features

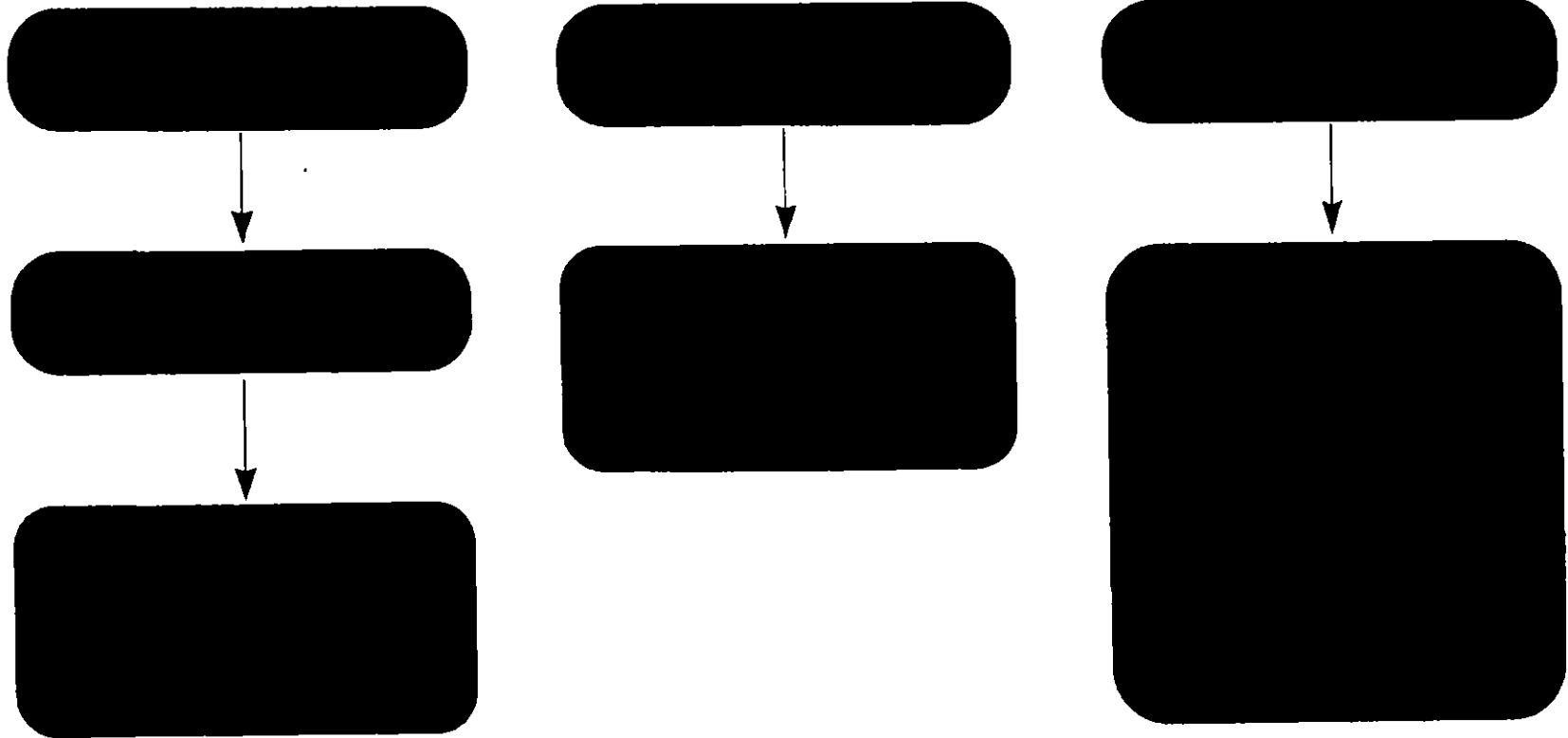
Immediate Value Transfer





Mondex Features

Security



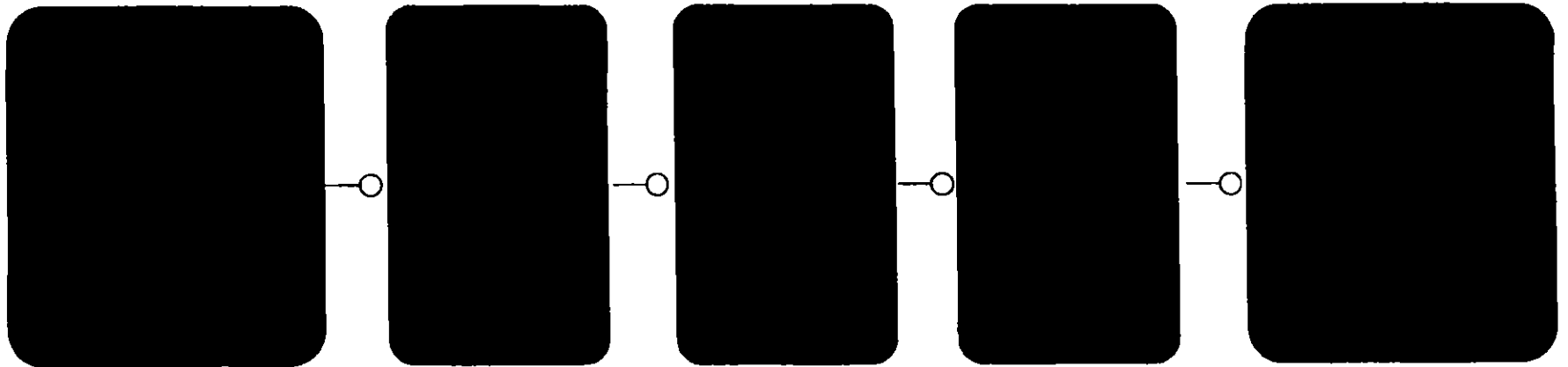
RECEIVED
SINCE 10 PM 10/10/01

CC 09 016476



Mondex Features

Risk Management



MONDEX IS A REGISTERED
SERVICE MARK OF MONDEX
INTERNATIONAL LTD.

CC 09 016477



Mondex Electronic Cash

Benefits for Issuers

- Increase revenue
- Reduce costs
- Strengthen customer relationships
- Extend delivery channels
- Global standards
- Time to market

CC 09 016478

ISSUING DEPARTMENT
SINGAPORE FINANCIAL SERVICES



Mondex Electronic Cash

Benefits for Acquirers

- Generates incremental volume
- Opens new merchant categories
- Creates strengthened relationships
- Provides additional service offering
- Increases portfolio size

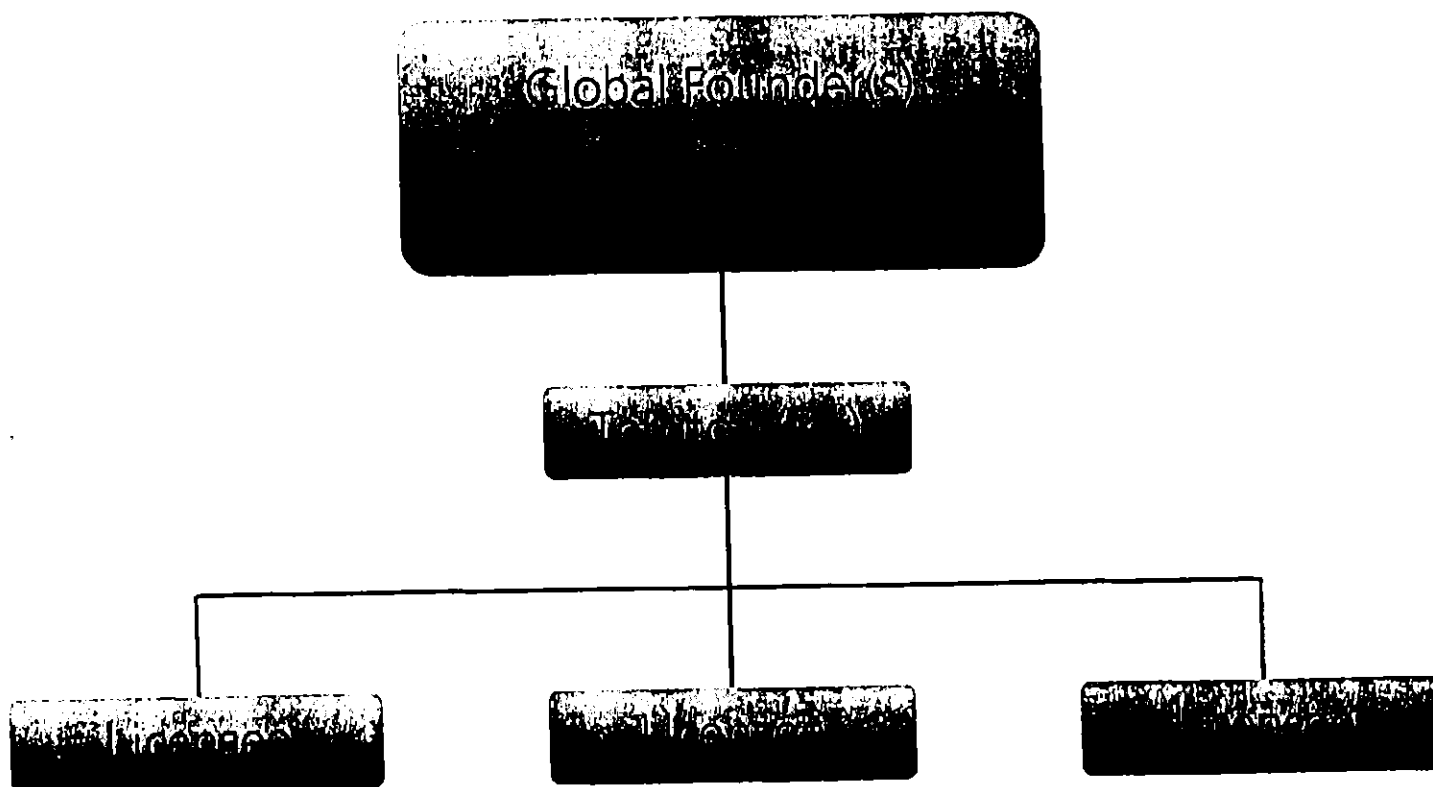
PROXY CONFIDENTIAL
SUBJECT TO PROTECTIVE ORDER

CC 09 016479



Mondex Electronic Cash

Franchise Structure



HIGHLY CONFIDENTIAL
SUBJECT TO PROMOTIVE ORDER

CC 09 016480



Mondex Electronic Cash


Launches/Planned Implementations



Australia
Hong Kong
New Zealand
Philippines
Israel
San Jose, Costa Rica
Swindon, U.K.
Exeter, U.K.
York, U.K.
Kingston, Canada
Guelph, Canada
San Francisco, U.S.
New York, U.S.
Internet, U.S.-based

HIGHLY CONFIDENTIAL
SUBJECT TO PROTECTIVE ORDER

CC 09 016481



Credit/Debit

Why Migrate Credit/Debit to Chip?

- Core products within a multi-application environment
- Consumers will expect combinations of payment products on the same card
- Mondex and Maestro are a natural consumer proposition
- Fraud reduction
- Off-line processing environment

FOR INFORMATION
SUBJECT TO PROSECUTIVE ORDER


CC 09 016482



Credit/Debit

Application Features

- A single application which can be tailored to fit individual cardholder and product requirements
- Risk management is card based
 - “1 in n” transaction on-line
 - Cumulative off-line value
- In combination with terminal floor limit, allows the card issuer to tailor the profile of the card uniquely to the cardholder



Credit/Debit

Application Features

- All transactions are authorized
 - On-line to issuer
 - By the card as the issuer's agent
- Parameters may be changed after card is issued
 - Allows issuers to change the behavior of the card in line with changing cardholder risk profiles
- Allows the issuers to maintain risk management without the cost of going on-line

PROPERTY OF
SUBJECT TO PRODUCTION

CC 09 016484



Electronic Commerce

Why Is E-Commerce Important?

- Evolutionary extension of our traditional business
- Revolutionary transition in value provided
- Exists between traditional retail and MO/TO
- Consumer "explosion" is forming
- Security is immediate issue
- SET infrastructure/platform is available
- Commercialization efforts are now the priority
- Chip will bring more security and portability to electronic commerce

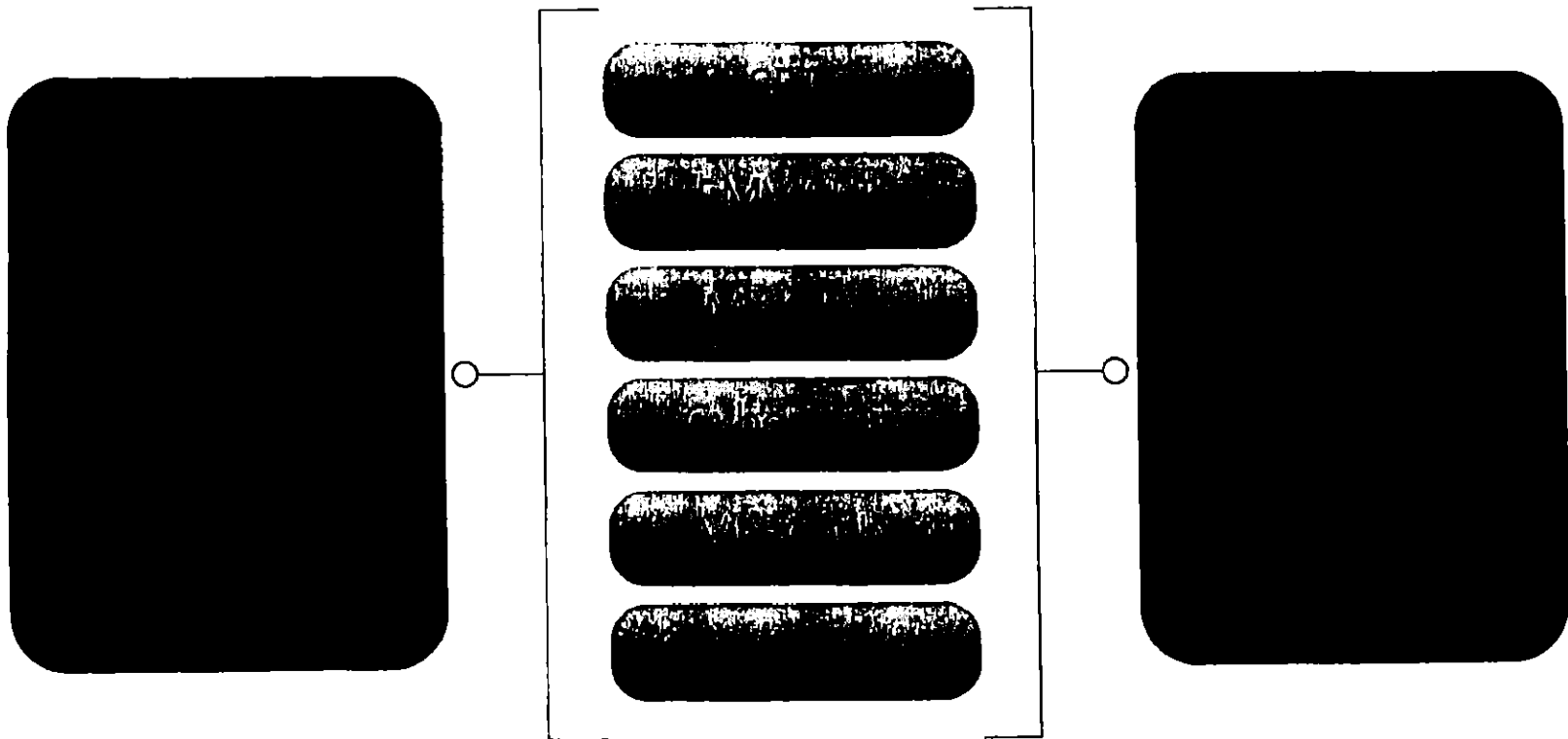
RECEIVED
SUBJECT TO PROTECTIVE ORDER

CC 09 016485



Electronic Commerce

OTP Supports Multiple Payment Methods



HIGHLY CONFIDENTIAL
SUBJECT TO EXECUTIVE ORDER

CC 09 016486



Three Key Messages

- MasterCard provides an integrated, end-to-end solution comprising an operating system (MULTOS) and multiple applications:
 - Credit
 - Debit
 - Mondex electronic cash
- MasterCard's solution is flexible and targets specific market challenges
- MasterCard's solution is available in line with market demand